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QUALITY OF LIFE IN AUTOMATIC IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PATIENTS

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ABSTRACT

QUALITY OF LIFE IN AUTOMATIC IMPLANTABLE CARDIOVERTER DEFIBRILLATOR RECIPIENTS

by Anita Christensen

The purpose of this study was to describe the perceived quality of life of automatic implantable cardioverter defibrillator (AICD) recipients. The Quality of Life Index (QLI) was completed by 23 AICD recipients. Correlation coefficients were calculated to determine the relationship between QLI score and the length of time since AICD implantation, and between QLI score and number of converting shocks delivered to recipients. No relationship was found between QLI score and length of time since implantation. No relationship was found between QLI score and number of converting shocks delivered. Health and functioning was perceived to be the lowest quality of life subscale for the AICD recipient.

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Chapter 1

INTRODUCTION

Sudden Cardiac Death (SCD) is defined as a spontaneous unexpected death or event unrelated to violence or trauma (Vlay, 1988). SCD is the most common cause of death in American men between 20 and 64 years of age. Between 350,000 and 400,000 persons die annually from this condition in the United States (Brooks, McGovern, Goran, & Ruskin, 1991). "The most frequently documented initial rhythm at the time of resuscitation during out-of-hospital cardiac arrest is ventricular fibrillation" (Brooks et al., 1991, p. 762).

Surviving a cardiac arrest is a relatively new phenomenon and is attributed to improved medical technology and community-based resuscitation efforts (Simons, Cunningham, & Catanzaro, 1992). Patients who survive a cardiac arrest are at high risk for a repeat cardiac arrest within the first year. Effective interventions for these high risk individuals are protection from another cardiac arrest and an understanding of the various psychosocial issues they confront. Individuals at risk for SCD and those individuals experiencing life threatening arrhythmias have been reported to experience fear, anxiety, depression, isolation, insomnia, and lifestyle changes (DeBorde, Aarons,

& Biggs, 1991). How these psychosocial issues affect the quality of life of these individuals is not known.

One of the most significant advances in the treatment of tachyarrhythmias associated with SCD has been the development of the Automatic Implantable Cardioverter Defibrillator (AICD). When implanted in a patient's abdomen the AICD continuously detects life threatening dysrhythmias and delivers an electrical shock thus restoring an effective cardiac rhythm.

The first automatic defibrillator was implanted in 1980 at The John Hopkins Hospital (McCrum & Tyndall, 1989). Since that time, over 25,000 devices have now been implanted worldwide (Cardiac Pacemakers Incorporation, 1992). Once implanted, the device has been shown to reduce mortality from sudden cardiac death to less than 5% at 5 years (Winkle, Mead, & Ruder, 1990).

Background of the Problem

The AICD is assuming an increasingly larger role in the treatment of SCD. While the device has made great advances in increasing length of life, little research is available to define the quality of life of AICD recipients.

A number of studies have addressed the psychological impact of life-threatening dysrhythmias. As early as 1967, Druss and Kornfeld reported longstanding, persistent, trouble some symptoms in a group of ten patients who had

survived cardiac arrest. Since this time, common psychological characteristics of SCD survivors have been identified. These characteristics include fear, anxiety, depression, isolation, and insomnia. Fear is the predominate emotion expressed by new AICD recipients. The new AICD recipient fears being shocked (DeBorde, Aarons, & Biggs, 1991). Some recipients fear they will receive a shock in a public place and live with fear of embarrassment and pain should the device fire (Teplitz, Egenes, & Brask, 1990). Depression results from multiple concerns of the AICD recipient. The patient is often transformed from feeling adequate, secure, and independent to feeling inadequate, insecure, and dependent. A loss of a sense of control, fear of being alone, and of not being able to continue in a previous occupation may further diminish self-esteem and provoke feelings of inadequacy and depression (Teplitz et al., 1990). How these psychological aspects affect the quality of life of AICD recipients has not been widely described in the literature. Physiologic concerns of the AICD recipient are numerous. Many patients require anti-dysrhythmic drugs to suppress arrhythmias. Common physiologic side effects of these medications include dyspnea, dizziness, tremors, blurred vision, metallic taste, tinnitus, photosensitivity, halo vision, anorexia, and weight loss (Burke, Rodgers, & Jenkins, 1992). These

physiologic side effects experienced by the AICD recipient may contribute to their quality of life, as they perceive it.

The AICD recipient may have additional social stressors related to the diagnosis of SCD. Work and financial security may be threatened (Kuiper & Nyamathi, 1991). Lifestyle modifications, such as driving restrictions and travel limitations, may result in loss of independence, and self-esteem. A patient may fear traveling to a place where health care personnel are not familiar with caring for patients with defibrillators. This may lead the patient to isolation from family, friends, and social situations (Teplitz et al., 1990).

Statement of the Problem

Patients with an AICD are affected by numerous issues that relate to their psychological, physical, and economic well-being. Scientific data about the psychological, physical, and economic changes that occur as a result of AICD implantation and how the recipients perceive their quality of life is not available.

Purpose

The purpose of this research study was to describe the perceived quality of life of Automatic Implantable Cardioverter Defibrillator (AICD) recipients using the Quality of Life Index (QLI). The diagnosis of SCD and the

implantation of the AICD has significant psychological, physical, and financial implications for patients and their families. Information gained from this study can be used in the development of strategies to improve quality of life for AICD recipients and their families. Nurses involved with the care of the AICD recipient will be able to target problem areas and design interventions to assist in optimizing quality of life.

Definition of Terms

For the purpose of this study, the following definitions were used:

1. Automatic implantable cardioverter defibrillator (AICD) is an electronic device implanted in the abdomen of persons with a history of tachyarrhythmias leading to sudden cardiac death. The AICD continuously monitors the heart's rhythm (Cannom & Winkle, 1986). When the AICD identifies that ventricular fibrillation or ventricular tachycardia has occurred, it defibrillates the heart in an effort to restore an effective cardiac rhythm. It is capable of continuous monitoring and delivering 100-150 shocks during the 30-40 month life of the device (DeBorde et al., 1991).

2. Sudden cardiac death is a spontaneous unexpected death or event unrelated to violence or trauma (Vlay, 1988).

3. Quality of Life is the score obtained by The Quality of Life Index (QLI) by Ferrans and Powers (1984).

The QLI measures quality of life in four areas: health and functioning, socioeconomic, psychological/spiritual, and family. Conceptually, quality of life was defined as "satisfaction with life, psychosocial as well as physical."

Objectives and Questions

The number of patients who live with recurrent ventricular dysrhythmias is increasing as mortality rates in this population decrease. For most of these patients, the presence of the dysrhythmic disorder has had implications in terms of daily life. There is lack of research data that describe quality of life issues in automatic implantable cardioverter defibrillator recipients. In addition, data which could be applied to the development of therapeutic modalities, using quality of life as an outcome, can contribute to the growing body of knowledge on quality of life as it relates to patients living with a heart disease.

Based on these objectives, the research questions for this study included:

1. What is the perceived quality of life of AICD recipients as measured by the Quality of Life Index?

2. What is the relationship between length of time since AICD implantation and quality of life as perceived by AICD recipients?

3. What is the relationship between the number of defibrillating shocks delivered to AICD recipients and their perceived quality of life?

Research Design

A descriptive design was used to study the perceived quality of life of Automatic Implantable Cardioverter Defibrillator recipients. A descriptive design was chosen for this study because there was limited scientific knowledge about the quality of life of AICD recipients. Participants for this study met the following inclusion criteria: over 40 years of age; able to speak, read, and write in English; AICD implanted for at least one month. Exclusion criteria include those patients with experimental devices.

Scope and Limitations

The scope of this study was concerned with describing the quality of life of individuals after surgical implantation of the AICD in individuals with life threatening dysrhythmias. The literature confirms that many physiologic, sociologic, and psychologic changes occur as a result of having a dysrhythmic diagnosis (Burke, et al., 1992; Druss & Kornfeld, 1967; Haggerty, Burkett, & Foster, 1983; Kupier & Nyamathi, 1991; Vlay & Fricchioni, 1985).

The limitations of this study were identified as:

1. The sampling procedure was one of convenience.

2. Determination of quality of life using the QLI was done only after implantation. Quality of life prior to AICD placement was not available. This does not allow for a comparison of quality of life before AICD placement.

3. The small sample size would not lend itself to generalization.

4. Only one determinant of Quality of Life was used.

5. No attempts were made to control for other chronic diseases such as diabetes mellitus or hypertension that might contribute to the perception of quality of life.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF RELATED LITERATURE

Conceptual Framework

Chrisman and Fowler's systems-in-change model was used for studying quality of life in this study (Chrisman & Fowler, 1980). The model is comprised of three interacting subsystems: biological, personal, and social. These subsystems interact with the environment along a developmental continuum in a continuous process of change. The status of each subsystem and the interdependent interactions within them influence health. Changes inside or outside the subsystems may produce stress that disturbs the system in achieving a state of equilibrium (Chrisman & Fowler, 1980).

This model views nursing as a therapeutic process concerned with maintaining the equilibrium of the subsystems within the environment. The nursing process is used to guide nursing care, with the goals of supporting health and promoting quality of life. The structure of the model is an "organized way to analyze interdependent aspects of any given patient situation" (Chrisman & Fowler, 1980 p. 75).

The quality of life of AICD recipients is easily incorporated into this model. As a stressor to the biologic system, dysrhythmias produce disequilibrium within the system, which is transmitted to the social and personal

systems, where varying degrees of disequilibrium may also occur. Using the nursing process, areas of disequilibrium can be identified so that nursing interventions can be individualized to assist in restoring the AICD recipient and his/her family to an optimal state of equilibrium.

Chrisman and Fowler's Systems-in-Change Model has been used as a conceptual framework in studies of quality of life in cardiovascular patients. Quality of life of elderly patients enrolled in cardiac rehabilitation was conceptualized using this model (Packa, Branyon, & Kinney, 1989). The goals of this cardiac rehabilitation incorporated exercise, education, and counseling to meet the biological, social, and personal needs of the elderly patient. Similarly, quality of life of adults, after a heart transplant, was examined using Chrisman and Fowler's Systems-in-Change Model (Packa, 1989). It was conceptualized that an adult who has had a heart transplant experienced a significant change in his or her biological, social, and personal systems of life.

Review of Related Literature

Quality of Life

There is no general agreement for the definition of quality of life; and neither is there a standard for its measurement. Wenger, Mattson, Furberg, and Elinson (1984) defined quality of life as total well-being, psychosocial as

well as physical. Studies in quality of life of patients with cardiovascular disorders can be discussed by describing the changes in biological, personal, and social subsystems of life.

Changes in the biological, personal, and social subsystems and the ability to obtain equilibrium can be equated to living a normal life. According to this conceptualization, the more "normal" a patient rates his life the better the quality of life (Ferrans, 1992).

In 1977, Barnes, Ray, Oberman, and Kouchoukos used employment status as the basic indicator of quality of life for coronary artery bypass patients. Three hundred and fifty patients were studied to determine changes in work status as a result of operation. Overall there was no improvement in return to work or hours worked after surgery. Rimm, Barborick, and Anderson (1976) also used employment as the basic indicator of quality of life. Eight hundred and ninety three men were studied to describe the effect of aortocoronary vein-bypass operation on changes in occupational status. The patients were divided into two age groups, with 55 years as the dividing point. The results showed that 11% of the younger men and 26% of the older group who were employed before the operation retired following the operation. LaMendola and Pellegrini (1979) pointed out that employment status alone was an inadequate

measure of quality of life in bypass patients because returning to work may not be the individual's goal and because other variables may influence the patients desire to return to work. LaMendola and Pellegrini (1979) found that many patients were highly satisfied and felt physically unlimited to work even though employment fell for all age groups. Since that time, many studies have used employment status as an indicator of quality of life, but, have used it along with other measures. Some quality of life instruments and studies focused on a person's happiness or affect (Ferrans, 1992).

In 1983, Jenkins, Stanton, and Savageau studied 318 patients before and after coronary artery bypass surgery. Biomedical, psychoneurological, physical function, role function, occupational, social, family, sexual, emotional, and attitudinal variables were assessed using the Positive Affect Scale and the Profile of Mood States. They found improvement on many factors. Angina was completely relieved for 85% of persons and disability days were reduced more than 80%. Seventy five percent of employed persons had returned to work. Anxiety, depression, fatigue, and sleep problems declined. They also reported that vigor and well-being scores rose significantly (Jenkins, et al., 1983).

Satisfaction is another conceptualization of quality of life. Ferrans (1990) defined quality of life as "a person's

sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her" (p.15).

Many studies of cardiovascular patients have assessed quality of life in terms of life satisfaction. Cantril (1965) asked subjects to define quality of life based on their personal values about what gives life meaning and provides personal satisfaction. The results of Cantril's study provided researchers with the Cantril Self-Anchoring Scale. The variables measuring satisfaction included: (a) relief of symptoms, (b) exercise tolerance, (c) physical limitations, (d) complications, (e) rehospitalization, (f) chronic illness, (g) mood, (h) leisure, (i) sexual function, (j) work status, (k) family relationships, (l) social participation, (m) social support, (n) health perceptions, and (o) economic situation. This scale has been used to measure life satisfaction in bypass patients, heart transplant recipients, and patients enrolled in cardiac rehabilitation programs (Flynn & Frantz, 1987; Packa, 1989; Packa, Branyon, & Kinney, 1989).

Flynn and Frantz (1987) asked 29 patients, six to 10 weeks post bypass, to rate their satisfaction using the domains in Cantril's Self-Anchoring Scale. They concluded that despite the number of reported complications and physical symptoms, quality of life was enhanced for the

majority of patients by undergoing heart surgery. They also reported that the promise of well-being, as a result of heart surgery, was reflected in the subjects' optimistic responses to appraisal of their own state of health and their future quality of life. Satisfaction as a conceptualization of quality of life was reported by Packa (1989). Packa used the McMaster Health Index Questionnaire to assess three dimensions of health after heart transplantation: the physical, the emotional, and social. In addition, Packa used the Cantril Self-Anchoring Scale to assess their quality of life for three points in time, one month before transplantation, at interview, and five years after transplantation. The findings of this study indicated that for the 36 patients undergoing heart transplantation the quality of life was excellent in each of the physical, social, and emotional domains. Of these domains, physical function was rated highest at the time of the post transplant interview and again 5 years after transplantation. In addition, overall quality of life had improved significantly from one month before transplant to after transplant.

Quality of life of elderly patients enrolled in cardiac rehabilitation at least one month were the subject of another study measuring satisfaction. Fifty one individuals were assessed for quality of life using the McMaster Health

Index Questionnaire and the Cantril Self-Anchoring Scale. The results indicated that quality of life was satisfactory in physical, social, and emotional domains (Packa, Branyon, & Kinney, 1989).

The Quality of Life Index was used to assess the effect of Percutaneous Transluminal Coronary Angioplasty (PTCA) on quality of life. Faris and Stotts (1990) assessed 20 patients prior to admission to the hospital and again six weeks after a successful PTCA. Using the QLI (Ferrans & Powers, 1985) and Spielberger's State-Trait Anxiety Inventory and the Physical Functioning Questionnaire they reported improvement in health and functioning, a decrease in state anxiety, and an increase in perceived physical functioning after successful PTCA. It is obvious from the literature that a multidimensional assessment of quality of life is desired to assess the whole person. This is evident from studies measuring more than one definition of quality of life (Farris & Stotts, 1990; Flynn & Frantz, 1987; Jenkins, Stanton, & Savageau, 1983; Packa, 1989; Packa, Branyon, & Kinney, 1989).

Ferrans and Powers (1985) stated that life satisfaction seemed to be the most important indication of quality of life. They acknowledged that satisfaction of various domains of life varied with individuals, as did the importance of various domains of life. Ferrans and Powers

developed the Quality of Life Index (QLI) to subjectively measure satisfaction and importance of four domains of life, health and functioning, socioeconomic, psychological/ spiritual, and family. Content validity, criterion-related validity and internal consistency reliability of the QLI has been tested and discussed (Ferrans & Powers, 1985). Cronbach's coefficient alpha for the total instrument has been reported as .93 with 88 graduate students and .90 with 37 dialysis patients. Content validity was established by the fact that items were based upon literature review and interviews to identify the components of a satisfying life. (Ferrans & Powers, 1985; Ferrans, 1990; Ferrans & Powers, 1992).

Survivors of Sudden Cardiac Death

Psychological characteristics of cardiac arrest survivors were first described in 1967 by Druss and Kornfeld. This study of ten survivors described insomnia, tenseness, anxiety, restlessness, irritability, trouble concentrating, and activity restrictions beyond those medically necessary. Druss and Kornfeld (1967) noted that similar psychological characteristics were noted in ten patients who were treated in the same monitored unit but who had not experienced a cardiac arrest. It was surmised that the presence of heart rhythm disturbances, as opposed to an arrest, may be responsible for the psychological distress.

Much attention has been given to the psychological needs of survivors of sudden cardiac death and patients with recurrent ventricular arrhythmias without a sudden death event. In 1984, Bergner, Bergner, Hallstrom, Eisenberg, and Cobb interviewed 424 survivors six months or more after an episode. Using the Sickness Impact Profile, a standardized interview tool that measures sickness related dysfunction, they found that the scores of cardiac arrest survivors were significantly higher(worse) than those of healthy individuals in the same geographical area. The problems identified were not incapacitating in most cases, and over three-fifths of the survivors were able to return to work.

Similar emotional disturbances were found in 58% of 33 survivors of ventricular tachycardia (VT) and ventricular fibrillation (VF). These disturbances, including severe anxiety and depression, were more common in patients who had had a recurrence of their ventricular tachycardia or ventricular fibrillation (Haggerty, Burkett, & Foster, 1983).

DeBasio and Rodenhausen (1984) noted that patients with ventricular tachycardia, undergoing electrophysiologic studies, had more profound psychological issues than physical issues. The patient and family were reported to be overwhelmed by the length of the hospital stay, the invasive

studies, the limited choice of options available, and the arrhythmia's impact on lifestyle and personal goals.

The works of Vlay and Fricchioni (1985) supported these findings. They reported that the most challenging psychosocial issue in patients was anxiety, often related to uncertainty about the future and loss of a sense of control. In a later study, these same researchers elaborated on the occurrence of anxiety and described anxiety as "a time-bomb mentality" (Fricchioni & Vlay,1986).

Dunnington and Finkelmeier (1988) conducted a study of 136 patients, with serious heart rhythm disturbances, to determine those factors associated with psychologic distress. The study concluded that patients requiring long term medical treatment, those forced to modify work status, and those with more advanced cardiac impairment were at greater risk for emotional consequences such as depression, anxiety, obsessive-compulsive behavior, and hostility. The authors also concluded that patients who had more than one risk factor had a greater chance of elevated psychological distress.

The first study of quality of life in AICD recipients was conducted in the late 1980's (Brodsky, Miller, Cannon, Ilvento, Mirabel, & Carillo, 1988). A questionnaire was developed to evaluate the psychological impact of the AICD on the patient and the patient's caretaker. The sample size

included 53 patients and 52 caretakers. Findings demonstrated general satisfaction with the device, although the majority of patients and caretakers feared the device firing. Other psychosocial stressors identified by the patient were: (a) embarrassment from the firing of the device in a public place, (b) reduced physical activity, (c) thoughts of death, (d) decreased sexual activity, (e) dependency, (f) memory loss, and (g) depression. The caretakers were found to have a high incidence of depression. The caretakers were more concerned with the patients' pain, feelings of panic, and death (Brodsky, Miller, Cannon, Ilvento, Mirabal, & Carillo, 1988). Neither the reliability nor validity of the questionnaire was reported. Pretesting of the tool was not addressed.

In 1989, Kalbfleisch and associates, conducted a retrospective study of 101 AICD recipients to determine the reemployment rate and factors associated with return to work. The authors suggested that reemployment is an important index of quality of life because it is an objective, behavioral measure of an age-appropriate social role. Forty-seven (46%) of the patients were employed before AICD implantation, and twenty-nine (62%) returned to work post-implantation. Marital status was found to be related to reemployment among AICD recipients. The authors suggested that the marital relation may have provided social

and emotional support facilitating the resumption of work. It was also reported that patients who returned to work were significantly better educated than those who did not return to work. There was no assessment made for patients who were physically capable of working yet chose not to work (Kalbfleisch, Lehmann, Steinman, Jackson, Axtell, Schuger, & Tchou, 1989).

Kolar and Dracup (1990) found no differences in psychosocial adjustment between survivors of cardiac arrest and patients with recurrent ventricular tachycardia. They concluded that the event of a cardiac arrest does not affect patient's psychosocial adjustment any more severely than recurrent ventricular dysrhythmias. The variables that proved to be statistically significant were marital status, number of dysrhythmic events, and history of heart failure.

Teplitz, Egenes, and Brask (1990) described the development of a support group for AICD patients. It was the authors' belief that a support group for AICD patients would be an effective intervention in reducing stress and would help facilitate psychosocial adjustment to AICD implantation. No controlled study of the efficacy of the support group was reported, but the authors stated that the group experience was perceived to be valued by the AICD recipient and family. This was evidenced by the positive feedback shared with the authors and group facilitator.

Kuiper and Nyamathi (1991) conducted a descriptive study to identify the perceptions, stressors and coping strategies used by patients living with an AICD. A triangulation method was used to collect both quantitative and qualitative data on 20 patients. The Jaloweic Coping Scale (JCS) was administered followed by an interview. Findings of this study concluded that a combination of coping strategies were used by AICD patients. Of the eight coping styles measured by the JCS, the optimistic coping style had the highest score and the emotive coping style (worried about the problem) had the lowest score. The optimistic coping style was most frequently used in all three major categories identified as needing adjustment to stress; physical, psychological, and social. Sexual activity, future concerns, restrictions on physical activities, restricted social activities, changes in clothing, dependency, and thoughts of death were important concerns of the AICD patients. Many of the stressors identified were related to restrictions on exercise, work, home, transportation, and uncertainty of being shocked. This study confirmed the findings of previous investigators (Brodsky, Miller, Cannom, Ilvento, Mirabel, & Carillo, 1988; Kolar & Dracup, 1990).

Firth and Dracup (1992) studied 33 patients with ventricular arrhythmias to identify the relationship between

social support and psychosocial adjustment. They concluded that patients who perceive themselves as having high degrees of social support are less likely to be anxious about their health status and social relations, and report less psychological distress.

In a recent study, Burke, Rodgers, and Jenkins(1992) used an exploratory design to identify the concerns and management strategies of patients with recurrent ventricular dysrhythmias. They found that these patients used a variety of strategies to manage their concerns. Five themes described strategies patients used to manage their physiological and psychosocial concerns. The five types of strategies that emerged from the data ranged from being "unable to handle the concern," to "compensates for the concern."

In summary, quality of life has been discussed and conceptualized in the literature since the mid-1960's. Several authors (Bergner, et al., 1984; Burke, Rodgers, & Jenkins, 1992; DeBorde, Aarons, & Biggs, 1991; Dunnington & Finkelmeier, 1988; Haggerty, Burkett, & Foster, 1983; Kuiper & Nyamathi, 1991) have explored the psychological effects of sudden cardiac death and AICD implantation. However, only minimal research (Kalbfleisch, et al., 1989) has emerged to assess how these psychological implications effect quality of life. Therefore, this study was performed to describe

quality of life in AICD recipients and to contribute to the body of knowledge on quality of life of cardiac patients. The findings of this research will assist nurses to identify quality of life problem areas so that appropriate interventions can be provided to optimize quality of life.

Quality of life for this study was conceptualized using Chrisman and Fowler's systems-in-change model (Chrisman & Fowler, 1980). The model is comprised of three interacting subsystems, biological, personal, and social. These subsystems interact with the environment along a developmental continuum in a continuous process of change. Dysrhythmias, and the potential for sudden cardiac death, represent a state of disequilibrium in the bio-psychosocial subsystems of the AICD recipient. Assessing how this disequilibrium affects the quality of life of AICD recipients is the first step toward implementing successful nursing interventions that promote equilibrium within the interacting subsystems.

Chapter 3

METHOD

Research Design

This was a descriptive study of the perceived quality of life of automatic implantable cardioverter defibrillator (AICD) recipients. The Quality of Life questionnaire was used to collect data. No attempt was made to manipulate variables or establish causal relationships.

Subjects

The subjects who participated in this study were a convenience sample of 23 AICD recipients. These patients were part of a new support group organized in the south San Jose area. The support group had met two times prior to this study. These patients' cardiac arrhythmias are managed by a south San Jose cardiovascular physician group. A list of AICD recipients was obtained from the physician group. Patients' medical records were screened to meet the following criteria: (a) those over 40 years of age; (b) those able to speak, read, and write in English; and (c) those having had an AICD for at least one month.

Patients qualifying as subjects were contacted at a support group meeting and/or by mail. Participants who voluntarily returned the questionnaires were the subjects for this study.

Instrument

Quality of life was measured by the Quality of Life Index (QLI) developed by Ferrans and Powers (1984). The QLI is a self-administered questionnaire that consists of two sections, one measuring satisfaction with various domains of life, the other measuring the importance of the domain to the participant. The QLI is used to measure quality of life overall and in four subscales: health and functioning, socioeconomic, psychological and spiritual, and family.

Following guidelines provided by the instrument's authors, quality of life scores are calculated by weighting each satisfaction response with its paired importance response. The highest scores are produced by combinations of high satisfaction/high important responses, and the lowest are produced by high dissatisfaction/high importance responses. The cardiac version of the QLI was used. This version of the QLI includes three related questions regarding chest pain, shortness of breath, and changes in life that have had to be made because of cardiac problems (See Appendix A).

Subjects responded, on a six-point Likert type scale, ranging from 6 (very satisfied) to 1 (very dissatisfied) to 36 satisfaction items, and 6 (very important) to 1 (very unimportant) to 36 importance items. The highest scores were produced by combinations of high satisfaction/high

importance responses, and the lowest are produced by high dissatisfaction/high importance responses. The range possible for each QLI score was 0 to 30, with 0 representing the lowest possible quality of life, and 30 being the highest. An overall QLI score was obtained for each subject. Scores also were calculated for the following subscales: (a) health and functioning, (b) socioeconomic, (c) psychological/spiritual, and (d) family.

Data Collection Procedures

Permission for this study was obtained from the Human Subjects Institutional Review Board at San Jose State University (see Appendix B). An additional letter of authorization was obtained from the cardiologist managing the participants' arrhythmias (see Appendix C). A letter of consent (see Appendix D), demographic survey, which included questions related to length of time since implantation and the number of defibrillating shocks that had been received (see Appendix E), and Quality of Life Index questionnaire were given or mailed to 36 patients.

The researcher presented the study to AICD recipients during a support group meeting. At this time, the QLI questionnaire, letter of consent, and demographic survey was distributed. Patients were asked to complete the questionnaire and demographic survey and return it to the researcher in a pre-addressed stamped envelope.

Patients not present at the support group meeting were sent an explanation letter about the research, the QLI questionnaire, letter of consent, and demographic survey. They were asked to complete the questionnaire and return it in a pre-addressed stamped envelope. A follow-up letter was sent to potential participants who had not returned their questionnaire, approximately two weeks following the meeting and/or mailing.

Completed questionnaires were coded by the researcher when received. At the end of the data collection, scores were tabulated and statistical analysis were completed, by computer, using the IBM statistical package SPSS/PC+.

In summary, this research study was designed to explore quality of life among a convenience sample of AICD recipients. The Quality of Life Index questionnaire was used to collect data. Quality of life was measured by questions addressing satisfaction and importance of various domains of life.

Chapter 4

FINDINGS

This chapter describes the findings of the perceived quality of life of 23 automatic implantable cardioverter defibrillator (AICD) recipients as measured by the Quality of Life Index (QLI). In addition, data from this study were analyzed to determine: if correlations existed between the scores on the QLI and length of time since AICD implantation, and if correlations existed between the scores on the QLI and number of converting shocks delivered by the AICD. Data from 23 questionnaires were analyzed. The IBM statistical package SPSS/PC+ was used to analyze the data.

The results of this study are presented in the following order: demographic profile of the participants; description of quality of life based on the QLI; the relationship between length of time since AICD implantation and QLI scores; and the relationship between the number of converting shocks delivered and QLI scores.

Demographic Profile of the Participants

Thirty three AICD recipients were invited to participate in the study. Twenty three AICD recipients responded to the survey. The study sample consisted of 22 men and 1 woman ranging in age from 46 to 81 years.

Twenty-six percent (n=6) of the participants were in the 61-65 age range, 22% (n=5) of the participants were in the 66-70 age range, and 17% (n=4) were in the 71-75 age range. Fifty percent (n=10) of the participants were Caucasian, and 15% (n=3) were Italian. Other ethnic groups of the participants included: Jewish, Asian, Portuguese, German, Iranian, and English. Each of these ethnic groups represented 5% of the total number of participants, with the exception of the English ethnicity which represented 10%. Three of the participants failed to report their ethnic origin.

Seventy-eight percent of the participants reported they had both coronary artery disease and had had a heart attack (myocardial infarction). Fifty-two percent of the participants reported they had high blood pressure (hypertension). Other medical conditions the participants reported included: congestive heart failure, (26%), arthritis, (22%), diabetes, (9%), lung disease, (9%), and Parkinson's disease, (4%). Seventy percent of the participants reported they had 2-3 medical conditions.

Eighteen (81.8%) of the participants were married, while four (18.1%) were unmarried. One participant failed to report his/her marital status.

The mean number of medications taken by the participants was 4.60, the lowest number of medications

being 0 and the highest number being 12. Eleven participants (47.8%) reported they were taking an anti-arrhythmic medication, while 12 participants (52.2%) reported they were not taking an anti-arrhythmic medication.

The length of time since implantation of the AICD ranged from 1 to 72 months, with a mean of 31.39 months. The frequency of converting shocks delivered ranged from 0 shocks to a maximum of 30 shocks, with a mean of 3.35. Ten recipients (43.5%) reported no shocks, while one (4.3%) recipient reported thirty shocks over 3 years.

Quality of Life Based on the QLI

The QLI was used to calculate quality of life by determining an overall score for each subject. Also, scores were calculated for each subject on each of the following QLI subscales: health and functioning, socioeconomic, psychological/spiritual, and family. The mean total QLI score was 22.37. The mean subscore for health and functioning was 21.35, for psychosocial the mean score was 22.41, for socioeconomic the mean score was 23.97, and the mean score for family was 24.56.

The overall QLI scores in the study population ranged from 12.26 to 29.26 with a mean of 22.37. Most (78.3%) of the respondents had overall QLI scores of 20 or greater. The health and functioning subscale measured the patient's

perception of quality of health, health care, chest pain, shortness of breath, energy, physical independence, amount of control over life, potential for along life, sex life, ability to meet family responsibilities, usefulness to others, amount of stress or worries, leisure activities, travel, potential for a happy old age or retirement, and life changes resulting from the heart condition. Health and functioning subscale scores ranged from 13.00 to 28.43 with a mean of 21.35.

Health was valued as "very important" by 78.2% of the respondents. Over half (56.5%) of the respondents were "moderately" to "very satisfied" with their health. Only one respondent was very dissatisfied with his/her health.

Socioeconomic subscale scores ranged from 12.75 to 30.00 with a mean of 24.56. Questions in this domain focused on friends, emotional support from others, home, neighborhood, standard of living, job, education, and financial independence. Most (86.9%) of the respondents were "very" to "moderately satisfied" with the emotional support they received from others. All but two respondents valued financial independence as "moderately" to "very important" (91%), yet satisfaction responses for this domain varied from "slightly dissatisfied" to "very satisfied" (100%). Responses aimed at job satisfaction and importance indicated that 48% of the subjects were retired, 30%

currently had jobs. Twenty-two percent declined to respond to this domain.

The psychological/spiritual subscale included questions related to peace of mind, faith in God, achieving personal goals, happiness, life satisfaction, personal appearance, and self concept. Scores ranged from 11.64 to 30.00, with a mean of 22.41. Peace of mind was valued as "very" to "moderately important" by 95.6% of the study population. Sixty-nine percent (n=16) of the population were satisfied with their peace of mind. Thirty percent (n=7) of the study population were moderately to slightly dissatisfied with their peace of mind.

Happiness, in general, was "very" to "moderately important" to all of the subjects, yet satisfaction responses for this domain varied from "moderately dissatisfied" (17%) to "very satisfied" (26%).

The family subscale was the smallest measure on the QLI. Items relating to family's health, children, family's happiness, and relationship with spouse or significant other were included. The range for the family subscale score was 7.50 to 30.00, with a mean of 24.56. All of the respondents reported that their relationship with their spouse or significant other was "very" to "moderately important." Most respondents (89.4%) were satisfied with their relationship with spouse or significant other.

Relationship Between Length of Time Since AICD Implantation and QLI Scores

Correlation coefficients were computed between length of time since implantation and overall QLI score. No significant relationship (r.0856; p=.349) was found between the overall QLI and length of time since implantation.

Relationship Between Number of Shocks and QLI Scores

Correlation coefficients were computed between number of converting shocks delivered and overall QLI scores. No significant relationship (r.0366; p=.434) was found between the overall QLI and the number of converting shocks delivered.

Chapter 5

CONCLUSION AND RECOMMENDATIONS

Discussion

During the past thirteen years the automatic implantable cardioverter defibrillator (AICD) has made a significant advancement in the treatment of tachyarrhythmias associated with sudden cardiac death. Limited scientific knowledge about the quality of life of AICD recipients has been reported. This study sought to: describe the quality of life of AICD recipients using the Quality of Life Index (QLI); determine if correlations existed between length of time since AICD implantation and QLI scores; and determine if correlations existed between the number of shocks delivered by the AICD and QLI scores.

Chrisman and Fowler's systems-in-change model was used in this study to conceptualize the quality of life of AICD recipients. Sudden Cardiac Death and the resulting treatment with the AICD produced stress within the biological system, which disturbed the system's ability to achieve equilibrium. The AICD recipient's health and functioning subscale represents the biological system. The biological system becomes stressed, which disturbed the system's ability to achieve equilibrium. The results obtained in this small population indicated that the biological system, represented by the health and functioning

subscore, is the system with the greatest amount of disequilibrium. This is evident from the fact that the health and functioning score is the lowest of the subscales. This may be explained by the fact that 78% (n=18) of the AICD recipients reported they have or had coronary artery disease and a myocardial infarction. It is known from the literature that post-infarction with scar and/or aneurism formation is one of the most common predisposing causes of cardiac arrest (Goldstein, Landes, & Leighton, 1985). Additionally, sixteen participants (70%) of this small population had 2 to 3 other medical conditions which might have contributed to this finding by influencing functional status. Moreover, the fact that they carry an AICD could be seen as a constant reminder of their health status.

Forty-three percent (n=10) have scores of 21.00 or less in the health and functioning domain. Of these 10 individuals, 5 (50%) restored equilibrium most frequently via the relationships within the family or social system. The high scores in the family subscale indicated that family relationships provided the greatest life satisfaction to this population.

The mean overall QLI score was 22.37 for the subjects of this study. The range possible for each QLI score was 0 to 30 with higher scores indicating a better quality of life. The mean overall score would seem to indicate AICD

recipients were satisfied with their overall quality of life after AICD implantation. The highest perceived quality of life subscore was indicated for the family subscore, with a mean score of 24.56. No conclusions may be drawn that the degree of quality of life an individual possesses is a result of AICD implantation since quality of life was not measured prior to AICD implantation.

The lowest satisfaction score obtained was in the health and functioning subscale, with a mean of 21.35. This finding has not been supported in previous research which most commonly identified psychological concerns post AICD implantation (DeBasio & Rodenhausen, 1984; Teplitz, Egenes, & Brask, 1990; Vlay & Fricchioni 1985). A speculation for this difference may relate to the fact that the health and functioning subscale measured some components of psychosocial concerns reported in the literature. For example, DeBasio and Rodenhausen (1984) reported that patients and family members were overwhelmed by the dysarrhythmia's impact on lifestyle and personal goals. Changes in lifestyle was measured in the health and functioning subscore. In addition, Vlay and Fricchioni (1985) reported that the most challenging psychosocial issues in patients was anxiety, often related to uncertainty about the future and loss of a sense of control. Again, satisfaction and importance of control over own life, and to

live a long life were measured in the health and functioning subscore. Teplitz, et al. (1990) reported that a patient may fear traveling to a place where health care personnel are not familiar with caring for patients with defibrillators. The health and functioning subscale measured the satisfaction and importance of travel on quality of life.

It was assumed that the AICD recipient's quality of life would increase as length of time since AICD implantation increased. However, no significant correlation was found between the overall QLI score and length of time since AICD implantation. This assumption was based on the idea that, with time, the AICD recipient would become more comfortable with his/her changes in lifestyle, and would utilize a combination of coping strategies to adjust to concerns related to his/her diagnosis and treatment (Kuiper, & Nyamathi, 1991).

It was also assumed that the number of shocks an AICD recipient received would adversely affect his/her perceived quality of life. However, no significant correlation was found between the overall QLI score and the number of converting shocks. The defibrillating shocks from the AICD are painful (Teplitz et al., 1990). It was assumed that an increase in the number of painful shocks would be associated with high levels of fear and anxiety. It was assumed that

this fear/anxiety would adversely affect his/her quality of life. Some patients stated that the shock was a reassuring experience. They felt that without the AICD shock they might not be alive today (personal communication with subjects, April 11, 1993). In addition, 46% of this small population of AICD recipients had not received a defibrillating shock. This may have influenced the findings between the overall QLI score and the number of defibrillating shocks.

Limitations

The major limitations of this study were: small sample size, convenience sampling, self-administered questionnaire, and lack of control over possible intervening variables such as other medical conditions that may have influenced quality of life. The small sample size did not allow the results to be generalized to a larger population. In addition, the sample was one of convenience which may have influenced the perceived quality of life in the socioeconomic subscale.

It is unknown whether participation in a support group influenced the participants' perceived satisfaction of emotional support.

Another limitation of the study may exist with the interpretation of the Quality of Life Index scores. No definition of the score was provided with the tool.

The researcher does not know how much greater a QLI score of 25 is compared to 24, only that it is greater.

Recommendations

Recommendations for further research are: use of a larger sample; measurement of perceived quality of life before and after AICD implantation; controlling for the possible effect of concomitant illness by separating subjects into illness groups using the New York Heart Association's Functional Classification System; and use of open ended questions to illicit explanations for low scores.

In terms of nursing intervention, the most important recommendation of this study is to include the family in educational support groups. Inclusion of the family in support group efforts may continue to contribute to high satisfaction in the family subscale.

This study has provided knowledge about the perceived quality of life in AICD recipients. It is apparent from the conclusions that family support encourages a positive quality of life. It is necessary for health care providers to include family members when changes in life-style occur resulting from cardiac arrhythmias.

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APPENDIX A

QUALITY OF LIFE INDEX

Ferrans and Powers
QUALITY OF LIFE INDEX
CARDIAC VERSION - III

Part I. For each of the following, please choose the answer that best describes how satisfied you are with that area of your life. Please mark your answer by circling the number. There are no right or wrong answers.

HOW SATISFIED ARE YOU WITH:	Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied
1. Your health?	1	2	3	4	5	6
2. The health care you are receiving?	1	2	3	4	5	6
3. The amount of chest pain (angina) that you have?	1	2	3	4	5	6
4. Your ability to breathe without shortness of breath?	1	2	3	4	5	6
5. The amount of energy you have for everyday activities?	1	2	3	4	5	6
6. Your physical independence?	1	2	3	4	5	6
7. The amount of control you have over your life?	1	2	3	4	5	6
8. Your potential to live a long time?	1	2	3	4	5	6
9. Your family's health?	1	2	3	4	5	6
10. Your children?	1	2	3	4	5	6
11. Your family's happiness?	1	2	3	4	5	6
12. Your relationship with your spouse/significant other?	1	2	3	4	5	6
13. Your sex life?	1	2	3	4	5	6
14. Your friends?	1	2	3	4	5	6
15. The emotional support you get from others?	1	2	3	4	5	6
16. Your ability to meet family responsibilities?	1	2	3	4	5	6
17. Your usefulness to others?	1	2	3	4	5	6

(Please Go To Next Page)

HOW SATISFIED ARE YOU WITH:	Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied
18. The amount of stress or worries in your life?	1	2	3	4	5	6
19. Your home?	1	2	3	4	5	6
20. Your neighborhood?	1	2	3	4	5	6
21. Your standard of living?	1	2	3	4	5	6
22. Your job? (If employed)	1	2	3	4	5	6
23. Not having a job? (If unemployed)	1	2	3	4	5	6
24. Your education?	1	2	3	4	5	6
25. Your financial independence?	1	2	3	4	5	6
26. Your leisure time activities?	1	2	3	4	5	6
27. Your ability to travel on vacations?	1	2	3	4	5	6
28. Your potential for a happy old age/retirement?	1	2	3	4	5	6
29. Your peace of mind?	1	2	3	4	5	6
30. Your personal faith in God?	1	2	3	4	5	6
31. Your achievment of personal goals?	1	2	3	4	5	6
32. Your happiness in general?	1	2	3	4	5	6
33. Your life in general?	1	2	3	4	5	6
34. Your personal appearance?	1	2	3	4	5	6
35. Yourself in general?	1	2	3	4	5	6
36. The changes in your life that you have had to make because of your heart problem (for example, changes in diet, physical activity and/or smoking?)	1	2	3	4	5	6

(Please Go To Next Page)

Part II. For each of the following, please choose the answer that best describes how important that area of life is to you. Please mark your answer by circling the number. There are no right or wrong answers.

HOW IMPORTANT TO YOU IS:	Very Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Very Important
1. Your health?	1	2	3	4	5	6
2. Health care?	1	2	3	4	5	6
3. Being completely free of chest pain (angina)?	1	2	3	4	5	6
4. Being able to breathe without shortness of breath?	1	2	3	4	5	6
5. Having enough energy for everyday activities?	1	2	3	4	5	6
6. Your physical independence?	1	2	3	4	5	6
7. Having control over your life?	1	2	3	4	5	6
8. Living a long time?	1	2	3	4	5	6
9. Your family's health?	1	2	3	4	5	6
10. Your children?	1	2	3	4	5	6
11. Your family's happiness?	1	2	3	4	5	6
12. Your relationship with your spouse/significant other?	1	2	3	4	5	6
13. Your sex life?	1	2	3	4	5	6
14. Your friends?	1	2	3	4	5	6
15. The emotional support you get from others?	1	2	3	4	5	6
16. Meeting family responsibilities?	1	2	3	4	5	6
17. Being useful to others?	1	2	3	4	5	6
18. Having a reasonable amount of stress or worries?	1	2	3	4	5	6
19. Your home?	1	2	3	4	5	6

(Please Go To Next Page)

HOW IMPORTANT TO YOU IS:	Very Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Very Important
20. Your neighborhood?	1	2	3	4	5	6
21. A good standard of living?	1	2	3	4	5	6
22. Your job? (If employed)	1	2	3	4	5	6
23. To have a job? (If unemployed)	1	2	3	4	5	6
24. Your education?	1	2	3	4	5	6
25. Your financial independence?	1	2	3	4	5	6
26. Leisure time activities?	1	2	3	4	5	6
27. The ability to travel on vacations?	1	2	3	4	5	6
28. Having a happy old age/retirement?	1	2	3	4	5	6
29. Peace of mind?	1	2	3	4	5	6
30. Your personal faith in God?	1	2	3	4	5	6
31. Achieving your personal goals?	1	2	3	4	5	6
32. Your happiness in general?	1	2	3	4	5	6
33. Being satisfied with life?	1	2	3	4	5	6
34. Your personal appearance?	1	2	3	4	5	6
35. Yourself?	1	2	3	4	5	6
36. The changes in your life that you have had to make because of your heart problem (for example, changes in diet, physical activity and/or smoking?)	1	2	3	4	5	6

APPENDIX B

IRB APPROVAL LETTER

SAN JOSE STATE UNIVERSITY

A campus of The California State University

Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research
One Washington Square • San José, California 95192-0025 • 408/924-2480

To: Anita Christensen
4875 Indian River Drive
San Jose, Ca 95136

From: Serena W. Stanford Serena W. Stanford
AAVP, Graduate Studies and Research

Date: April 19, 1993

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"Quality of Life in Automatic Implantable Cardioverter Defibrillator Recipients"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Dr. Serena Stanford immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted. If you have questions, please contact me at 408-924-2480.

CC: Frances Munet-Vilaro

APPENDIX C

LETTER OF APPROVAL FROM PHYSICIAN GROUP

VALLEY
CARDIOVASCULAR
CONSULTANTS

Joseph M. Casey, M.D., FSCAI
Dwain L. Coggins, M.D.
Stephen E. Green, M.D. FACC
Ada A. Koransky, M.D. FACC
Anthony C. Lopez, M.D., FACC
Michael R. Nagel, M.D. FACC
William B. Ricks, M.D. FACC
Ronald M. Rossen, M.D. FACC
Niel F. Starksen, M.D. FACC

2410 Samaritan Drive, Suite 101
San Jose, CA 95124
(408) 559-2800
Fax 371-9544

February 1, 1993

RE: Christensen, Anita

TO WHOM IT MAY CONCERN:

This letter is to confirm the fact that I have given permission for Ms. Anita Christensen to contact my patients, and to have them complete a questionnaire as part of her investigation into the quality of life of automatic implantable cardioverter defibrillator patients.

Sincerely,

Ada A. Koransky, MD

APPENDIX D

LETTER OF CONSENT

SJSU SAN JOSE STATE UNIVERSITY

A campus of The California State University

School of Applied Arts and Sciences • Department of Nursing • Graduate Program
One Washington Square • San Jose, California 95192-0057 • 408/924-3134

AGREEMENT TO PARTICIPATE IN RESEARCH
SAN JOSE STATE UNIVERSITY

Responsible Investigator: Anita Christensen

Title of Protocol: Quality of Life In Automatic Implantable Cardioverter Defibrillator Recipients

I have been asked to participate in a research study that is investigating quality of life following automatic implantable cardioverter defibrillator placement.

I understand that:

1) I will be asked to fill out and return a questionnaire that has been mailed and/or given to me.

2) No anticipated risks are expected as a result of participating in this study.

3) There are no benefits to me from participating in this study.

4) No treatments will be withheld as a result of participating or not participating in this study.

5) The results of this study may be published, but any information from this study that can be identified with me will remain strictly confidential.

6) There will be no compensation as a result of participation in this study.

7) Any questions about my participation in this study will be answered by Anita Christensen, RN at (408)229-0102 or (408)558-2317. Complaints about the procedures may be presented to Bobbye Gorenberg, Graduate Coordinator, at (408)924-3130. For questions or complaints about research subject's rights, or in the event of research-related injury, contact Serena Stanford, PhD (Associated Academic Vice President for Graduate Studies & Research) at (408)924-2480.

8) No service of any kind that I may otherwise be entitled to will be lost or jeopardized if I choose not to participate in this study.

9) My consent is voluntary; I may refuse to participate in this or in any part of this study, and I may withdraw at any time without prejudice to my relations with SJSU.

10) I have received a copy of this consent form.

I HAVE MADE A DECISION WHETHER OR NOT TO PARTICIPATE. MY SIGNATURE INDICATES THAT I HAVE READ THE INFORMATION PROVIDED ABOVE AND THAT I HAVE DECIDED TO PARTICIPATE.

THE SIGNATURE OF THE RESEARCHER ON THIS DOCUMENT INDICATES AGREEMENT TO INCLUDE THE ABOVE NAMED SUBJECT IN THE RESEARCH AND ATTESTATION THAT THE SUBJECT HAS BEEN INFORMED OF HIS OR HER RIGHTS.

_____ _____
Subject's signature Date

_____ _____
Investigator's signature Date

APPENDIX E

DEMOGRAPHIC SURVEY

Demographic Data

1. What is your age? 40-45_____
   46-50_____
   51-55_____
   56-60_____
   61-65_____
   66-70_____
   71-75_____
   76-80_____
   81+_____

2. What is your gender? Male_____
   Female_____

3. What is your ethnic origin?_____

4. Have you ever been treated for any of the following medical conditions? (Check if applicable).

   Coronary Artery Disease_____

   Heart Attack (Myocardial Infarction)_____

   Diabetes_____

   High Blood Pressure_____

   Lung Disease_____

   Cancer_____

   Congestive Heart Failure_____

   Stroke_____

   Arthritis_____

   Other_____

5. What is your marital status?

6. What medications do you take? (Please List)

7. How long have you had your device?

8. How many shocks have you received?

APPENDIX F

PERMISSION LETTER TO USE QUALITY OF LIFE INDEX

UIC
The University of Illinois at Chicago

Department of Medical-Surgical Nursing (M/C 802)
College of Nursing
845 South Damen Avenue, 7th Floor
Box 6998, Chicago, Illinois 60680
(312) 996-7900

February 3, 1993

Ms. Anita Christensen
4875 Indian River Drive
San Jose, California 95136

Dear Ms. Christensen:

Thank you for your interest in the Quality of Life Index (QLI). I have enclosed the cardiac version of the QLI and the computer program for calculating scores. I also have included a list of the weighted items that are used for each of four subscales: health and functioning, socioeconomic, psychological/spiritual, and family, as well as the computer commands used to calculate the subscale scores. The same steps are used to calculate subscale scores and overall scores.

There is no charge for use of the QLI. You have my permission to use the QLI for your study. In return, I ask that you send me any publications of your findings using the QLI. Such reports are extremely important to me.

If I can be of further assistance, please do not hesitate to contact me. I wish you much success with your research.

Sincerely,

Carol Estwing Ferrans, PhD, RN
Assistant Professor